

GREEN MATTERS

A newsletter from the Alberta Environmentally Sustainable Agriculture Council

Safeguarding a Precious Resource

From AESA
Council's
Chair

by Bruce Beattie,
Alberta Milk Producers

Water, water, every where,

And all the boards did shrink;

Water, water, every where,

Nor any drop to drink.

These lines from the famous poem, *The Rime of the Ancient Mariner*, penned by Samuel Coleridge in the late 1700s, might strike a chord today. Imagine, surrounded by a vast sea of water, yet to die of thirst. The recent tragic events in Walkerton, Ontario, emphasize the need for constant vigilance, even in a land with plentiful water, where safe water on demand is often taken for granted.

In agriculture, we have a greater appreciation of this resource. Water is supplied from a well or dugout, built and often designed by the landowner. Today's modern farms and food processing operations need large volumes of clean water to be successful in meeting the demands of today's competitive marketplace.

We in Alberta's agricultural industry have already taken important steps in protecting this precious resource. The Canada-Alberta Environmentally Sustainable Agriculture (CAESA) Agreement's water quality study is a case in point. CAESA took a lead role in examining the issue and looking for ways to minimize the industry's impacts. The federal government is also focusing on water with Agriculture and Agri-Food Canada's new publication *The Health of Our Water*. It provides an in-depth analysis of the issues surrounding this topic and should be required reading for all of us.

Farmers and processors share this finite resource with rural and urban residents, other industries, and recreational users, along with fish and wildlife. We all use water and then return it to the environment, sending it on to the next user. We do not own it, we cannot make more of it, but we do influence its quality.

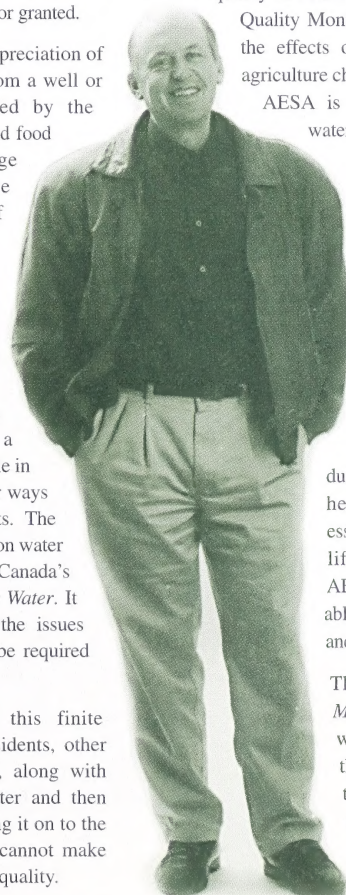
The Alberta Environmentally Sustainable Agriculture (AESA) Program supports a wide range of projects on water quality. The emphasis in its Farm Based component on riparian and watershed management recognizes the intimate connection between land and water, and the quality of both. AESA's Soil and Water

Quality Monitoring programs track the effects on these resources as agriculture changes. Across Alberta,

AESA is providing support to watershed groups, realizing the success that comes from local involvement. The Processing component helps processors to find cost-effective wastewater treatment options.

By addressing all these aspects, AESA is helping the industry to contribute to a healthy environment, essential to our quality of life, and to attaining AESA's goal of a sustainable future for the industry and the environment.

This issue of *Green Matters* will consider water quality and how the industry is working to protect it, and I hope, will encourage greater appreciation of this vital resource.



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Issue No. 4, Summer 2000

Finding Water Quality Solutions

in the Oldman River Basin

The Oldman River and its tributaries wind through a landscape busy with activity – cities and towns, crop land, livestock operations, irrigated land, oil and gas sites, other industries, and natural areas. Whatever happens on the land can affect water quality, and in the Oldman River Basin, there's a lot happening.

The combination of the basin's intensive land use and its limited supply of water makes it the perfect place to develop effective ways to protect water quality. And that's how the Oldman River Basin Water Quality Initiative was born.

Created in 1997, the initiative brings together all the stakeholders in the basin to address water quality concerns. It involves leaders from many areas, including health, agriculture, environment, municipalities, industry and education.

The initiative's five-year action plan, released in March 1998, has three major objectives: to measure water quality in the basin, to implement changes to solve existing water quality problems and prevent future

problems, and to have the local communities take leadership in managing water quality in the basin.

Collecting accurate water quality data proved to be a crucial step for the initiative. "Even within the first year, when people saw the data, they understood that everyone is part of the issue and everyone needs to be part of the solution," says Brent Paterson. "The data provide a common understanding of the situation, allowing the discussion to move from pointing fingers to seeking effective solutions."

Paterson represents Alberta Agriculture, Food and Rural Development on the committee that guides the initiative's day-to-day activities. A large group of stakeholder representatives meets once or twice a year to provide overall direction for the program. Some of the major players in the implementation of the action plan are Alberta Agriculture, Chinook Health Region, Alberta Environment, the City of Lethbridge, and Agriculture and Agri-Food Canada.

Four teams have been created to carry out the initiative's action plan. Each team is already making excellent progress:

- The Land Assessment Component has completed mapping the basin's land use types. This information is being used to find links between land use and water quality, and to define where water quality is

vulnerable to contamination. The vulnerability maps will allow municipal planners and developers to avoid these areas when siting new developments.

- The Water Quality Monitoring Component is measuring a wide range of variables, including nitrogen, phosphorus, bacteria and about

40 pesticides, at sites along the river and its tributaries, and at wastewater treatment plants. The component has established baseline data for the river system and identified areas of concern. Continued monitoring will allow tracking of changes

"When people saw the data, they understood that everyone is part of the issue and everyone needs to be part of the solution."

in water quality as practices change.

- The Best Management Practices Component is assessing the effects of various practices on water quality in priority watersheds. A number of applied research and demonstration projects have been set up with local landowners, and more are planned for this year.
- The Education and Awareness Component is providing information about water quality and the initiative. Activities to date include annual public workshops, a website, annual reports, newsletters, and brochures on how urban and rural people can protect water quality. This year, the component will change its thrust from general awareness to education for practice change.

The increased focus on practice change is one of the keys to the initiative's long-term success. Says Paterson, "Protecting water quality needs to become part of everyone's lifestyle, rather than looking to others to solve the problem." Local leadership is the other key. "We hope that when the five years are up, the local communities will take over leadership in making change happen and protecting the resource."

And the future looks bright. He says, "People attending the latest annual workshop showed a strong commitment to move forward. There's a positive feeling and drive to work this thing through."

**For more information, contact
Brent Paterson by phone (403-381-5140)
or email (brent.paterson@gov.ab.ca),
or visit the initiative's website at
<http://www.cattlefeeder.ab.ca/obi/>.**



Oldman
River Basin

Courtesy Alberta Agriculture, Food and Rural Development

Common Goals for Healthy Landscapes

Riparian health assessments build a common language between cattle producers and land managers," says Greg Hale. "The assessment provides a common set of consistent criteria or questions. This leads to a common understanding of the riparian area as the producer and our field staff go through the assessment. Once we have this common understanding, the producer can work towards solutions, if any are required."

Hale is the provincial coordinator for the Alberta Riparian Habitat Management Program, better known as Cows and Fish. He's talking about one of the "tools" in the program's process to help local groups reach their goals for a healthy landscape.

Riparian areas are the zones of water-loving vegetation along the edges of streams, rivers and lakes. Healthy riparian areas provide flood protection, vital habitat for fish and wildlife, and shelter and forage for livestock. They also filter out some contaminants from runoff for better water quality, maintain the stream's bed and banks, stabilize stream flows, and recharge groundwater.

Says Hale, "Our goal is to foster a better understanding of how improvements in grazing management on riparian areas can enhance landscape health and productivity, for the benefit of ranchers and others who use and value riparian areas."

Cows and Fish uses a voluntary, community- and producer-driven process. Hale explains, "The local group determines what the land use issues are in their watershed and how to address them. And they capture dollars and cost-share the actions." A group interested in riparian management invites Cows and Fish in, and together they work through a process that includes team building, awareness, tool building, community-based action and riparian health assessment. Cows and Fish has created various tools for its process, including its new riparian health assessment guide (complete this fall).

Cows and Fish has grown rapidly since it began in 1992 in southwestern Alberta. Says Hale, "Today we speak to about 6000 people per year on awareness. By raising awareness across Alberta, we've also generated a demand for more information." Through strong support from AESA and the Alberta Cattle Commission (ACC), Cows and Fish is now able to hire a coordinator for central and northern Alberta to better meet this demand.

The program brings together many partners. Hale explains, "ACC and Trout Unlimited Canada are the lead partners, and then there's also Canadian Cattlemen's Association, Alberta Environment, Alberta Agriculture, Fisheries and Oceans Canada, and PFRA. Probably our most important partners are the ranchers, their communities and agricultural service boards that work with us on a local and regional basis." Several funding agencies are also key to Cows and Fish's success, including AESA, Alberta Conservation Association, National Soil and Water Conservation Program, and the Canada Alberta Beef Industry Development Fund.

For more information, call Greg Hale at 403-381-5377 or visit the new Cows and Fish website at <http://www.cowsandfish.org>.



Maintaining healthy riparian areas by improving grazing management

Francis Gardner

A proactive community effort for riparian health

When Diana Andrews is asked how riparian health affects her family's quality of life, she says, "It *is* our quality of life. We live right on Mosquito Creek. Every morning, I look out the window to see the deer grazing, the Swainson's hawks nesting by the house, a duck nesting in the garden, and the occasional beaver seeing how tall the willows are growing, and to check on our livestock. To me, it's really important to see the willows, the wildlife, birds and livestock all coexisting."

Andrews is chairperson of the Lower Mosquito Creek Water Users Association, a group of landowners along the creek committed to doing their part for riparian health. "As an agricultural community group, we're working through Cows and Fish to address the agriculture-related issues. It's a proactive community effort based on workshops, field days and seminars," she says.

Cows and Fish staff completed a baseline health assessment along the creek. The association and Cows and Fish, with funding from PFRA, are demonstrating practices like rotational grazing systems and livestock watering options at six sites. As well, some members of the association are improving their riparian areas using their own time and money.

The association is also working with various agencies to address other water quality and quantity issues along the creek. For the members, restoring their riparian area is an essential part of maintaining a healthy landscape and, as Greg Hale says, "Healthy landscapes translate into healthy communities."

WATER

Quality Monitoring – Getting the Word Out

With hundreds of water samples collected each year and 53 laboratory tests conducted on each sample, the partners in AESA's Water Quality Monitoring Program have plenty of work just to analyze the data and communicate the results in annual technical reports. But the partners are taking communications one step further. They're bringing the essential results to the people who can really use them – Alberta's farmers.

The long-term monitoring program is tracking changes in water quality in 23 small agricultural streams (see box). The program partners are Alberta Agriculture, Alberta Environment, Alberta Health and Wellness, and PFRA. The partners are developing two innovative components for communicating results to farmers.

The first is a "watershed report card" describing the annual results for each stream. (A watershed, or drainage basin, is all the land that drains runoff to a point on a stream or lake.) "The report card will provide a snapshot of the main findings for the year for the watershed," explains Sandra Cooke, who chairs the monitoring program's committee.

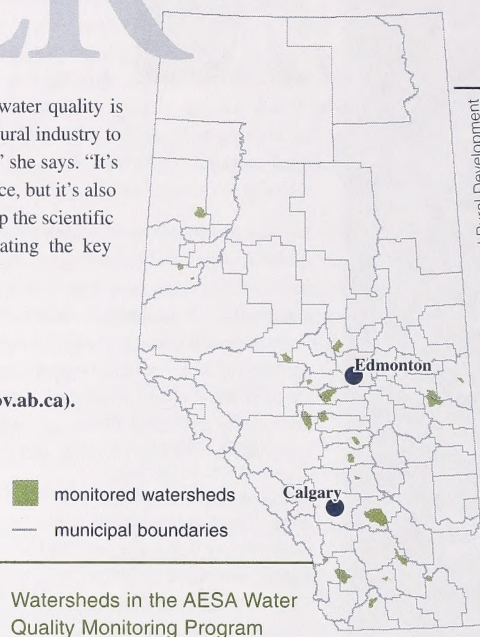
"We're testing drafts of these report cards with farmers, to make sure that we provide the information they need in a clear, understandable way," says Cooke, a Water Quality Specialist with Alberta Agriculture.

Results from testing the draft report cards show that farmers are keenly interested in water quality and want information on how they can protect it. "Information on a stream's water quality and its 'watch-points' – aspects that require special attention – will give local farmers a direction for positive, proactive change," she notes.

The second component is a water quality index. "The index is a communication tool for describing overall water quality," says Cooke. "It is based on a mathematical formula that converts a lot of complex data on various water quality characteristics into an easy-to-understand score." The index was developed by the program partners based on an index used in British Columbia and is now adopted as Canada's national water quality index.

"Practical information on water quality is vital in helping the agricultural industry to protect the water resource," she says. "It's easy to get lost in the science, but it's also extremely important to keep the scientific integrity while communicating the key information."

**For more information,
contact Sandra Cooke
(phone: 780-427-3397;
email: sandra.cooke@gov.ab.ca).**



Courtesy Alberta Agriculture, Food and Rural Development

Water quality monitoring is a complex, time-consuming activity requiring scientifically rigorous planning, sampling and analysis. The AESA Water Quality Monitoring Program, initiated in 1997, is focused on collecting accurate, representative water quality information for Alberta's small agricultural watersheds. The program is long-term because water quality tends to be very variable; data must be collected over a long period to see and understand any trends.

The program's 23 watersheds (see map) were selected to represent differences in agricultural intensity, runoff potential and ecoregions. "The intensity ranking is based on census data for fertilizer and pesticide expenses, and manure production. The runoff potential ranking is based on natural characteristics like soils and landforms," explains Sandra Cooke. Ecoregions are areas of similar soils, landforms and climate. "Using an ecoregion-approach allows us to draw comparisons between a monitored watershed and other watersheds with similar characteristics."

Cooke says, "The success of the monitoring effort is due to the commitment of Alberta Environment's field staff and Alberta Agriculture's conservation coordinators and technologists and Irrigation Branch staff." Samples are collected at each monitoring site during both high and low stream flows, to ensure representative water quality data for all periods of the year. "The samples are tested for the various forms of phosphorus and nitrogen, fecal coliform and *E. coli* bacteria, and about 40 different pesticides, mostly herbicides," she says.

The researchers have also compiled detailed datasets on factors like land cover and topography, to better understand how pollutants are carried by runoff to nearby streams. These datasets will be used for GIS-based modeling to assess runoff processes and identify areas with a high potential for the movement of pollutants to streams.

How is the monitoring being done?

Tracy Scott



Roger Bryan

"Most farmers are concerned about conserving the environment and are interested in working with organizations like Ducks Unlimited to do that," says Roger Bryan.

"When we can provide practical solutions for an issue on the farm, such as stock watering, as well as ways to protect wildlife habitat, it is very worthwhile to work together."

Bryan represents Ducks Unlimited Canada (DU) on AESA Council. DU has been working with farmers for over 60 years to integrate waterfowl habitat conservation with farmers' needs for profitable, environmentally sound farming operations. The partnership benefits both farmers and DU: private lands provide vitally important waterfowl habitat, and healthy waterfowl habitat contributes to healthy environments for other wildlife and people.

Bryan, a Professional Agrologist, is DU's Camrose Area Representative. His main responsibility is planning, delivery and administration of DU and Alberta Prairie CARE conservation programs in the Camrose area of central Alberta.

"Alberta's wetlands are some of the most productive and diverse ecosystems for wildlife. They also are important for flood control and recharging groundwater – a vital role where groundwater is the main source of drinking water," says Bryan. "As individuals, we may not think that one individual action such as draining a wetland will cause much of an effect. But what happens when many others do the same? To stop the continuing loss of Alberta wetlands is a challenge not just for farmers and DU, but for society as a whole."

"To meet our conservation goals, DU has to forge strong, effective partnerships," notes Bryan. He believes that AESA Council is a valuable partner. Council's broad representation brings him together with people from many agricultural and environmental agencies, to share ideas and information, and build relationships.

Bryan is involved in a range of activities related to environmentally sustainable agriculture. For example, he represents AESA Council on the National Soil and Water Conservation Program Management Committee, and he's a Director of the Parkland Conservation Farm near Mundare.

Bryan has a strong commitment to a healthy, diverse environment. "When I think about the Alberta I want for my children and their children, I hope I can tell them we made our province a better place to live, for people and wildlife for generations to come."

**"If you're at the
forefront, you may have
some impact on what's
implemented."**

Colin Kure

Colin Kure's conservation roots go deep. "Five generations of Kures have lived and practiced sustainable agriculture on the same section in west central Alberta," he says. "It's pretty hard to deny the value of good land stewardship when everything that we've been blessed with comes from the land."

"Since the mid-1920s, we've had a legume-cereal crop rotation with livestock," says Kure. "A strong legume rotation is the essence of sustainable cropping and healthy soil." The Kures also use minimum tillage, straight cutting and shelterbelts to conserve soil and water. And they have retained native woodlots and wetlands on the farm, and native vegetation along the creeks.

"Living near the headwaters of the Red Deer River system has made it easy for us to be aware of the importance of looking after the water resource and the watershed," he notes. "It may sound glorious, but all we're doing is looking after our own backyard." And Kure's sons are carrying on the

family's conservation tradition: one is an environmental engineer and the other is in watershed management.

On AESA Council, Kure represents the Alberta Fish and Game Association (AFGA).

AFGA is a non-profit organization

of hunters and anglers. It works cooperatively with landowners, community groups, industry and government to promote habitat conservation and the conservation and use of fish and wildlife. For example, AFGA's Parkland Stewardship Program helps interested landowners to integrate soil, water and wildlife conservation in their farming practices. And its Operation Grassland Community focuses on conserving grassland habitat and wildlife.

The link between AFGA and AESA Council is an important one for Kure. "We're not going to change agriculture overnight. But if you're not at the table, you don't get a say. If you're at the forefront, you may have some impact on what's implemented."

Kure sees agriculture as a key player in land stewardship issues like water quality and habitat diversity. "Alberta is at the headwaters of a lot of major rivers in Canada. We have to be really particular about how we manage the land. And agriculture is one of the main ways we manage the land." To keep rural Alberta as "one of the best parts of the world to live in," he says, "depends heavily on all of us caring for the natural integrity of the countryside and being good stewards."



Courtesy Colin Kure



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Partnerships for Water Quality, Nutrient Recycling & Diversification

Recently constructed lagoon, part of the M.D. of Taber's treatment system for potato wastewater

processors, municipalities and farmers in two recent projects. "These projects provide important benefits for all the players," explains Bill Gordon. "The processor's requirements for water supply and wastewater treatment are met. The municipality has a more diversified economy. Local farmers can get valuable nutrients for their crops and a new buyer for their potatoes. And water quality is protected for everyone."

Gordon is the program consultant for the Alberta Government's Municipal Industrial Wastewater Infrastructure for Agricultural Processing Program. He's talking about two projects that recently received cost-shared funding under this program. Announced in 1998, the three-year program helps Alberta municipalities invest in water and wastewater infrastructure to accommodate agricultural processing development.

In one of the two projects, the M.D. of Taber is partnering with Lamb-Weston, Inc.'s plant near Taber. In the other, the County of Lethbridge has teamed up with McCain Foods' plant near Chin. Both projects are leading to ties with local farmers to make use of valuable by-products from the wastewater treatment process.

"At the M.D. of Taber's wastewater treatment plant, the treated process wastewater contains essential nutrients for

crops," says Gordon. "So Lamb-Weston, Inc. has teamed up with local farmers who will apply the treated wastewater as a liquid fertilizer through their irrigation systems." Then, the nutrients help to grow crops, the crops go to processors, and the nutrient cycle comes full circle.

Irrigation application rates of the treated wastewater will be based on Alberta Environment's guidelines for wastewater irrigation and on sustainable nutrient application rates based on annual soil testing. All of the treated wastewater will be used for irrigation; none will be discharged directly to water bodies.

"The County of Lethbridge and McCain Foods have selected a different option for wastewater treatment," notes Gordon. "They are producing two by-products from the wastewater: normal irrigation water and a nutrient-rich soil conditioner."

The nutrients in the McCain plant's wastewater are removed as a sludge in a pre-treatment lagoon. The sludge will be used as a soil conditioner and nutrient source for crops. The treated process wastewater will be clean enough to be applied using the rates for normal irrigation water, without restrictions based on nutrient content. Like the M.D. of Taber project, all the treated wastewater will be used for irrigation, and no wastewater will be discharged directly to water bodies.

For more information on these projects, call Bill Gordon at 780-422-2611.

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Green Matters is the newsletter of the Alberta Environmentally Sustainable Agriculture (AESAs) Council. Council consists of 29 representatives from Alberta's agriculture and food processing industry, environmental organizations and government. Its mandate is to: identify and evaluate environmental issues facing Alberta's agriculture and food processing industry; encourage the industry to proactively address these issues; advise the Alberta Minister of Agriculture, Food and Rural Development on these issues; and direct the AESAs Program.

The purpose of *Green Matters* is to provide a forum for discussion of environmental issues in Alberta's agriculture and food processing industry.

To subscribe to *Green Matters*, call 780-422-4385.

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Alberta Environmentally Sustainable
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